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Philadelphia College of Osteopathic Medicine
School of Professional and Applied Psychology
Department of Clinical Psychology

THE RELATIONSHIP BETWEEN NOSTALGIA, LIFE MEANINGFULNESS, AND
DISTRESS TOLERANCE WITHIN A CHRONIC PAIN POPULATION

By Samantha Lyon

Submitted in Partial Fulfillment of the Requirements for the Degree of

Doctor of Psychology

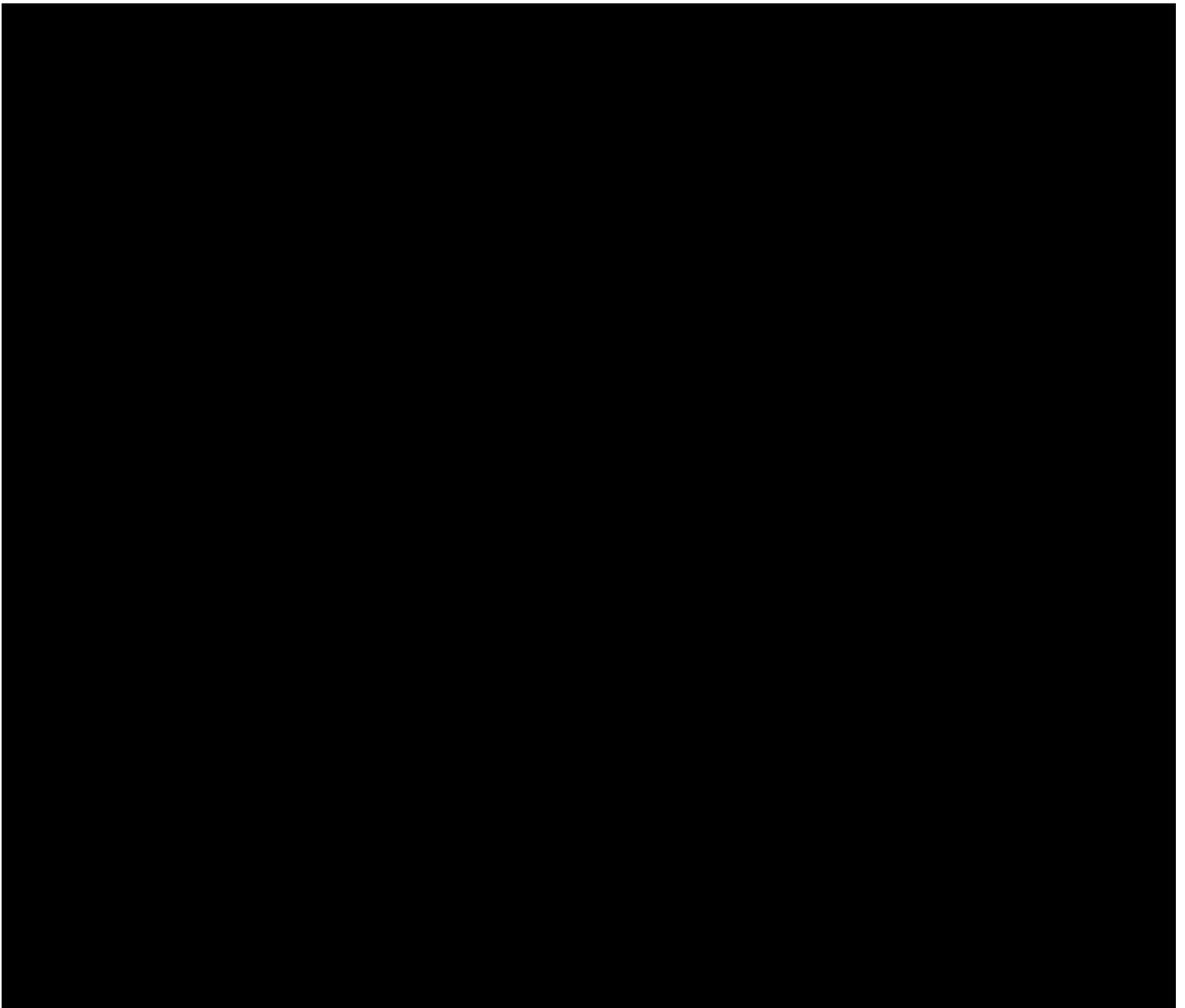
May 2021



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DISSERTATION APPROVAL



ACKNOWLEDGEMENTS

First and foremost, I would be remiss if I did not take the time and space to acknowledge how integral my family has been in my journey to becoming a psychologist. Without their love and support I would not be writing this acknowledgments page at all. Without my parents' hard work throughout my entire life this dream of mine would never be a possibility, and I would have never learned the value of hard work and perseverance. I consider myself so lucky to have been able to look up to both my dad and my mom as examples of incredibly hardworking and humble people. I have seen my dad build a business from the ground up after having to restart his life, and I have seen my mom raise four kids while going to school full time to become an RN and then work overnight shifts in the ER. My parents have been incredible role models for myself and my siblings. Thank you, Dad and Mom, for giving me all the right tools to become who I am today. Thank you to Ryan for being that annoying older brother I always looked up to growing up, to Erin for being a source of comedic relief when I complained (which is a lot), and to Abi for being so supportive and proofreading literally everything I sent her way throughout my entire college career.

I also want to thank my partner, Brandon, for being here every step of the way. Thank you for always knowing the right thing to say or do to quell my anxiety, for buying me Wawa when I was too busy studying or writing, and mostly for providing me the love and support I needed to get through this doctoral program. You have been here, unwavering through this crazy journey, which means the world to me. Thank you for being the best. I also want to thank my friends (old and new) who supported me with love

and understanding these last few years. Colleen, Sam, Kaylene, and Shaina, I cannot imagine this journey without you.

Of course, this dissertation would not exist without the help of my committee, Drs. Poteau, Brecher, and DiTommaso. I appreciate their help and guidance immensely and for letting me do research on the nuanced topic of nostalgia. Thank you, Dr. DiTommaso, for being the most nostalgic committee member. Thank you, Dr. Poteau, for being my chair and keeping me on track throughout the entire process and also helping with the statistics (something I struggled with). And thank you, Dr. Brecher, for your thoughtful guidance and perspective related to not only the chronic pain population but also nostalgia. I will always appreciate the extra hours you spent in supervision with me helping me use nostalgia as a case conceptualization tool with chronic pain patients. I also want to acknowledge and thank Reclaim Ability Pain Services and Dr. Niti Cooper for letting me use their practice to recruit participants for this dissertation; for that I am so grateful.

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ABSTRACT

Nostalgia, defined as a bittersweet longing for the past, has been found to buffer against existential threats through increasing perception of meaning in life (MIL). MIL consists of subconstructs including coherence, significance, and purpose. The relationship between nostalgia and the subconstructs of MIL has not been fully established and which MIL component(s) nostalgia affects is unknown. The primary objective of this study was to better understand the relationship between nostalgia and components of MIL as well as psychological wellness within a chronic pain population. It was hypothesized that participants high in trait nostalgia would have a higher overall MIL score than participants with low trait nostalgia, in addition to better psychological distress tolerance. Also, it was hypothesized that participants with higher trait nostalgia would experience a higher sense of coherence than significance or purpose in MIL. Data were collected through the use of validated self-report questionnaires, and adult participants were recruited from a chronic pain clinic in New Jersey. Multivariate analysis of variances and Pearson correlations were performed to determine the relationship between high and low trait nostalgia and subconstructs of significance, purpose, coherence, and psychological distress. Overall, the present research did not find a significant relationship between trait nostalgia and life meaningfulness. There were statistically significant relationships between trait nostalgia and self-continuity as well as trait nostalgia and psychological wellness. These findings, however, were opposite of the expected direction, which can be explained by the chronic pain patient's experience of life meaning. Future research focusing on life meaningfulness, self-continuity, psychological wellness, and nostalgia within the chronic pain population is explored.

CHAPTER 1: INTRODUCTION

Statement of the Problem

Throughout the last few centuries, the notion of nostalgia has evolved from a potentially fatal neurological disease into a positive psychological social emotion. The first documented account of nostalgia as a maladaptive medical disorder can be found in Johann Hofer's doctoral dissertation from 1688; however, references to nostalgia can be found in the works of Hippocrates and Caesar and can even be found within the text of the Bible (Kiser Anspach, 1934; Sedikides et al., 2008). Hofer was a Swiss medical student who coined the term nostalgia by combining the Greek words *nostos* and *algos*, translating to return and pain, respectively (Sanchez & Brown, 1994); the meaning of the two Greek words combined have been translated to "a painful suffering to return home." Early symptoms of nostalgia were reported to include anxiety, anorexia, obsessive thinking and longing for home, uncontrollable weeping, insomnia, heart palpitations, respiratory disturbances, nausea, vomiting, and high blood pressure, among others (McCann, 1941; Wildschut et al., 2008). During the period between the 17th and 19th centuries, nostalgia was considered a medical illness, and was even said to be a cause of death in some instances (McCann, 1941).

Nostalgia has come a long way since the 19th century. By the late 20th century, researchers began finding that nostalgia may not truly be a cause of death, synonymous with homesickness, a psychological disorder symptom, or a variant of mourning and depression (McCann, 1941; Sanchez & Brown, 1994). Rather, nostalgia has been largely reconceptualized as a sentimental longing for the past, paralleling dictionary definitions of "a wistful or excessively sentimental yearning for return to or of some past period or

irrecoverable condition” (Merriam-Webster, 2018). Recent research has disproven theories portraying nostalgia in a negative light and has pointed to a more adaptive view, implicating nostalgia in more positive qualities than negative ones (Cheung et al., 2013). Nostalgia has been found to be a common, positive emotion experienced by many; it is particularly strong within the younger adult community (Batcho, 2013).

Nostalgia has been shown to exhibit various positive psychological benefits. This includes bolstering a sense of fairness in life (Baldwin & Landau, 2013; Routledge et al., 2011), continuity (Sedikides et al., 2006), and social connectedness (Turner et al., 2012; Zhou et al., 2008; Zhou, Wildschut, Sedikides, Chen, & Vingerhoets, 2012). Nostalgia also has been shown to combat feelings of loneliness (Routledge et al., 2013; Zhou, et al., 2008). Nostalgia seems to have a far reach in the human psyche. One of the most impressive reaches is that of its effect on life meaningfulness. As a whole, humans tend to seek out ways in which their lives are meaningful; therefore, findings regarding nostalgia are significant. Nostalgia has been shown to buffer against existential threats through mechanisms such as social connectedness and self-continuity (Wildschut et al., 2006). Research has shown that when an individual’s meaning of life is threatened, that individual will unconsciously use nostalgia in order to decrease defensive responding to meaning threat (Routledge et al., 2012). When compared to imagining a desired future experience, nostalgic thinking increases an individual’s perceived presence of life meaning (Routledge et al., 2012). These findings all speak to the importance of nostalgia in the regulation of meaning in life (MIL), and point specifically to nostalgia serving as a defense against meaninglessness.

One population that is widespread within the general population is the chronic pain population. Chronic pain is defined as recurrent or enduring pain lasting for at least 6 months. The Centers for Disease Control and Prevention (CDC) estimates that chronic pain affects roughly 70 million adults in the United States, ranging from 11% to 40% of the entire population (Dahlhamer et al., 2018). Individuals who experience chronic pain not only experience significant physiological distress, but also significant psychological distress (Firmin et al., 2011). Further, individuals coping with chronic pain are thrown into new identities of for they may have little or no prior self-conceptualization, which may alter perceived meaning of life (Hellstrom, 2001). Those who experience chronic pain often revise their goals and life expectations (Pinquart et al., 2009), and view their former lives with a nostalgic lens (Hellstrom, 2001). There seems to be a connection between life meaning and nostalgic remembering within the chronic pain population. Currently, there is little research on nostalgia and pain, but there is research that suggests that MIL can enable individuals to manage and cope with pain (Routledge et al., 2012), and nostalgia is a tool that has been shown to increase perceptions of MIL.

Further research on nostalgia and its impact on the self and the mechanisms surrounding buffering against life meaninglessness within a chronic pain population can be useful in understanding nostalgia as a whole. There are several facets of meaning delineated in the literature, and it is unclear which aspects of meaning nostalgia impacts more or less. A recently published study indicated that there is a connection between nostalgia and life meaningfulness. The study found that nostalgia impacts life meaningfulness through social connectedness and self-continuity, i.e., feelings of connection and perceptions of cohesion from the past to present self (van Tilburg et

al., 2019). This is evidence that nostalgia may affect meaning through means of cohesion and coherences. Research pertaining to MIL has distinguished three separate facets involved in nostalgia: coherence, purpose, and significance. Notably, there is extensive overlap between the constructs of self-continuity and coherence—the ability draw patterns from the past and integrate them into the present—and they are oftentimes used interchangeably in meaning literature. Nostalgia affects MIL, generally bolstering meaning; however, the gap in the literature pertaining to which of the three facets of meaning nostalgia targets continues to require clarification. Research pertaining to buffering against existential threats to the psyche has clinical implications, and interventions based around nostalgia for individuals who experience these existential threats may prove useful should a broadened understanding of nostalgia illuminate particular facets of meaning affected by nostalgia manipulations.

The purpose of this study was to delve deeper into the aspects of life meaningfulness that nostalgia triggers in an individual. There is extensive research pertaining to nostalgia and its impact on life meaning and protection from existential threats; however, the literature lacks the precise impact nostalgia has on meaning. Current life meaning research indicates there are three distinguishable types of meaning that comprise life meaningfulness: significance, purpose, and coherence. Although there is consensus that nostalgia affects life meaning, it is unclear which piece of life meaning it affects the most, if it does not affect them all similarly. The present study investigated whether the results found in recent research indicating a connection between nostalgia and MIL through self-continuity can be reproduced within the chronic pain population. This study utilized a correlation design examining how trait nostalgia relates to the three

subconstructs of MIL (life coherence, purpose, and significance) through nostalgia (Southampton Nostalgia Scale-2) and MIL (Multidimensional Existential Meaning Scale) scales within a specific population (people with chronic pain).

Research Questions

Do the changes of MIL precipitated by nostalgia equivalently apply to all three facets of MIL (significance, purposefulness, coherence) within individuals who experience chronic pain? Do individuals who experience chronic pain benefit from nostalgia's effects on psychological well-being?

Hypotheses

The present research hoped to replicate previous research (van Tilburg et al., 2019) within a chronic pain population to test whether higher trait nostalgia is correlated with higher MIL. This research also hoped to demonstrate, in line with recent research (van Tilburg et al., 2019), that nostalgia affects the coherence (i.e., self-continuity), a subconstruct of MIL, significantly. In addition, the present research hoped to show that within the chronic pain population, individuals who are more prone to engage in nostalgia do so as a coping resource to reduce perceptions of pain intensity and to experience more psychological wellness than individuals with less propensity to engage in nostalgic thinking.

Hypothesis 1

It was hypothesized that trait nostalgia would be positively correlated with life meaningfulness within a chronic pain population.

Hypothesis 2

It was hypothesized that high trait nostalgia participants would demonstrate a significantly higher sense of self-continuity than individuals low in trait nostalgia within a chronic pain population.

Hypothesis 3

It was hypothesized that high trait nostalgia individuals would demonstrate a significantly higher sense psychological wellness than individuals low in trait nostalgia within a chronic pain population.

CHAPTER 2: LITERATURE REVIEW

History of Nostalgia

Nostalgia, now deemed a bittersweet emotion, was once considered a maladaptive neurological disorder. Johannes Hofer discovered nostalgia by observing Swiss mercenaries who displayed symptoms during their service while away from their homeland for extended periods of time (Hofer, 1688, as cited in Kiser Anspach, 1934). The Swiss mercenaries developed nostalgia while away from home due simply to homesickness; however, it should be noted that there was once a debate over whether the symptoms emerged as a result to homesickness or the clanking of cowbells heard continuously by the mercenaries in the Alps, as military physicians proposed (Wildschut et al., 2008). Hofer came to the conclusion that nostalgia was a direct result of being away from home (Hofer, 1688, as cited in Kiser Anspach, 1934).

Hofer believed that nostalgia was an illness elicited by memories of one's homeland, that would result in dangerous diseases or death and was exacerbated by the loathing of foreign air, which afflicted people through various discomforts that could only be cured by returning to their homelands. According to Hofer, diagnostic signs of nostalgia included wandering around sadly, scorning foreign manners, distaste of strange conversations, heart palpitations, disturbed sleep, decreased strength, hunger, thirst, frequent sighs, stupidity of the mind, and fevers that could result in death (Hofer, 1688, as cited in Kiser Anspach, 1934).

From 1688 onwards, nostalgia was generally considered a medical disease. John Collins Warren, a member of the Harvard Medical School faculty for much of his career and the first person to perform an operation using ether as an anesthesia (S. Martin,

2006), mentioned nostalgia as a medical disease in his work many times during his time at Harvard from 1809 to 1847 (Sanchez & Brown, 1994). Nostalgia as a medical diagnosis made its way into the present as recent as 2012, when it appeared in the ICD-9 related to adjustment reaction (World Health Organization, 2012). The idea of nostalgia as a medical diagnosis slowly began to change in the early 19th century. The diagnosis of nostalgia shifted from a medical disorder to a psychological symptom (Hepper et al., 2012). Nostalgia became related to homesickness and was so maladaptive that some theorists considered it to be a cause for criminal acts (McCann, 1941). Studies from this time period suggested that nostalgia was positively correlated with crime, with one such example from the literature reporting a woman who set fire to her employer's house because she was feeling homesick (McCann, 1941). During this time period, American soldiers who fought in the United States Civil War were frequently diagnosed with nostalgia, as they were often far from home and experienced homesickness (McCann, 1941).

By the 20th century, psychodynamic theorists took hold of nostalgia and shaped it to fit their point of view. Nostalgia became synonymous with melancholia or depression, and this view of nostalgia persisted throughout much of the 20th century through the research of psychodynamic scholars. Frost (1938) labeled nostalgia as immigrant psychosis experienced by individuals travelling away from their home countries. In contrast, other scholars who were influenced by the psychodynamic perspective likened nostalgia to a regressive manifestation related to grief and loss (Castelnuovo-Tedesco, 1980). It was not until 1979 when sociologist Fred Davis began looking at nostalgia differently than it had been viewed for centuries. Davis (1979) was the first researcher to

separate the idea of homesickness from the idea of nostalgia, and began to use more positively connoted words in nostalgia research. Davis's research showed participants using words such as warmth, old times, and childhood when referring to nostalgia. Homesickness and nostalgia began to separate at this point, and homesickness began to amass its own sizeable literature (Wildschut et al., 2008).

In the early 21st century, the understanding of nostalgia changed again and research began to highlight nostalgia as an emotional state that has more positive qualities than negative ones (Wildschut et al., 2008). Nostalgia was no longer considered synonymous with homesickness, as it was found that whereas homesickness revolves around longing for place of origins, nostalgia's content revolved around a variety of subjects such as people, places, and objects focusing on redemption or celebration rather than on loss (Baden et al., 2004; Sedikides et al., 2006). Nostalgia is now understood and defined as a sentimental longing for one's past. Nostalgia is essentially a blend of features, including cognition and affect, thus making it an emotion that is fundamental to human existence (Hepper et al., 2012; McCann, 1941).

Prevalence, Content, and Triggers of Nostalgia

Prevalence

Nostalgia has come a long way from its beginnings as a mid-17th century death-inducing medical disorder. Research on nostalgia in the 21st century has concentrated on the beneficial qualities of nostalgia, moving away from viewing nostalgia as a medical disorder or psychological symptom. In recent research, nostalgia has consistently been labeled a positive, social, self-relevant emotion (Vess et al., 2012; Zhou et al., 2008). Nostalgia has been receiving an influx of experimental attention by psychologists, as it

has also been found that nostalgia is a common emotional experience (Wildschut et al., 2006).

Nostalgia serves key psychological functions and researchers have found that experiences of nostalgia are strong within the younger adult community (Batcho, 2013). In 2006, researchers surveyed 172 undergraduates at the University of Southampton and found that 79% of undergraduates experienced nostalgia at least once per week, with 16% reporting daily experiences, and 42% experienced nostalgia three to four times per week (Wildschut et al., 2006). One study found that a majority of adults in every 5-year cross-sectional cohort from ages 18 to 90 reported experiencing nostalgia on a regular basis (Hepper et al., 2012). Much of the research pertaining to the prevalence of nostalgia has been done on American and British populations; however, it is important to note that nostalgia has been shown to be widespread across various cultures throughout the world (Hepper et al., 2014). In a 2014 study, researchers recruited over 1,700 students from universities in 18 countries including but not limited to Australia, Chile, Israel, Japan, Romania, and Uganda (Hepper et al., 2014). Researchers found that there are prototypical features of nostalgia seen across cultures, with nostalgia universally considered an emotion that involves “reminiscing” about “fond memories,” with primary factors of nostalgia focusing on cognitive, motivational, and contextual features. Notably, the three African countries involved in the study were the only countries with mean correlations less than .70, indicating that countries from Africa may experience and define nostalgia differently than other cultures (Hepper et al., 2014). Nevertheless, nostalgia is a human experience observed in everyday life in various cultures.

Lay conceptions of nostalgia include terms such as happiness, warm, sentimental, personal meaning, fond memories, and childhood (Baldwin et al., 2015; Wildschut et al., 2006). The longings purported in the conceptualization of nostalgia often refer to memories or episodes that are usually accompanied by a perception of transience (Howard, 2012). Although nostalgic episodes tend to be fleeting within an individual, the overall senses that accompany the emotion tend to be intense. Feelings associated with nostalgia have been shown to have desirable and undesirable features. Some desirable features associated with nostalgia include intense feelings of happiness, feeling loved, and high self-esteem, whereas some undesirable features include sadness, loneliness, and loss (Wildschut et al., 2006).

Content

With a wide range of features, it is important to understand the content underlying nostalgia. Various studies have looked into pinpointing what exactly is the average content of nostalgic memories, and it has been shown that nostalgic memories tend to focus on the self or individuals who are in close relations with the self, such as family and friends (Holak & Havlena, 1992; Wildschut et al., 2006). One study found that 80% of memories involve the self in a central role (Baden et al., 2004). Specific objects also serve as content for nostalgia; although it has been shown that objects may be in the content of nostalgia, they are often tied to reminiscences of people (Holak & Havlena, 1992). Although the content of nostalgia varies between individuals, general nostalgic themes focus on momentous life events (Zhou, Wildschut, Sedikides, Shi, & Feng, 2012). Themes associated with redemption, celebration, periods in life, and past selves are also present (Baden et al., 2004; Wildschut et al., 2006). Interestingly, nostalgic narratives

often contain disappointment and loss, but are followed by subsequent triumphs over adversity (Wildschut et al., 2006). Research has also indicated that nostalgic memories tend to focus not necessarily on the individual's perception of his or her past self, but more so what the self idealizes for the future (Bradbury, 2012).

Following decades of research of nostalgia as a bittersweet emotion, many advantageous effects have been discovered. Nostalgia has not only been found to be self-relevant and a social emotion, but also has been found to bolster feelings of fairness in life and overall sense of meaning in individuals (Routledge et al., 2012; Sedikides et al., 2006). The connection between state nostalgia and perceived MIL may be due to the mediating effects of social connectedness as well as greater inclusion of the out-group in the self-promoting social connection (Routledge et al., 2012; Turner et al., 2012; Zhou et al., 2008). Nostalgia has been shown to combat feelings of loneliness through social connection as well as increase perceived social support (Baldwin et al., 2015; Cheung et al., 2013). Furthermore, the self-affirming nature of nostalgia promotes psychological and physical well-being.

Nostalgic reverie has been shown to heighten health optimism, improve health attitudes, and increase health behaviors (Kersten et al., 2016). Nostalgia promotes psychological and physical well-being by amplifying explicit self-esteem (Wildschut et al., 2006) and the accessibility of positive self-attributes and self-efficacy (Vess et al., 2012). Nostalgic reflection extends to implicit self-positivity and implicit self-esteem, meaning that if an individual derives his or her self-worth from relationships, his or her nostalgic content may focus on interpersonal relationships more so than other content such as personal achievements (Vess et al., 2012; Wildschut et al., 2010). Nostalgia has

also been shown to increase optimism through increased self-esteem, indicating that nostalgic memories of one's past can assist in not only maintaining feelings of self-worth but also bolster present feelings, thus brightening future outlook (Cheung et al., 2013).

The benefits of nostalgia's social functions are not limited to the self. Research indicates that nostalgia can improve in-group interactions and reduce out-group stigma through facilitating social connection and improving intergroup processing (Turner et al., 2013). Turner, Wildschut, and Sedikides (2012) found that out-group stigma toward overweight individuals decreased after the invocation of a nostalgic memory involving an overweight individual. Not only was stigma reduced in this study, but it was also found that nostalgia increased trust in the previously stigmatized out-group members (Turner et al., 2012). A separate study conducted by Wildschut and colleagues (2014) found that individuals who experience shared nostalgia, also known as collective nostalgia, had strengthened positive in-group evaluations and approached, rather than avoided, in-group members when compared with control conditions. The same study also indicated that collective nostalgia possesses unique benefits when compared to personal nostalgia. Specifically, collective nostalgia was found to increase support intentions and strengthen participants' judgments of the group as a whole positively, so much that group members would be willing to incur financial sacrifices in groups that experience collective nostalgia more so than loosely formed groups (Wildschut et al., 2014). Collective nostalgia has also been found to be a predictor of out-group-directed anger and contempt as well as collective action; these findings were substantiated during the Umbrella social movement in China (Cheung et al., 2017). Collective nostalgia not only has effects on small groups, but can be as far reaching as social movements involving thousands.

Nostalgic reflection increases psychological growth and fosters growth-oriented behaviors (Baldwin & Landau, 2013). Psychological growth tendencies promoted by nostalgia tended to be mediated by positive emotion (Baldwin & Landau, 2013). This finding is in line with psychological growth research that indicates positive emotion is a characteristic mechanism behind growth-promoting experiences (Fredrickson, 2001). This suggests that nostalgia can bolster exploration in novel and self-expansive activities by means of providing a sense of self-esteem and increasing positive perceptions of the self (Baldwin & Landau, 2013). Although nostalgia promotes engagement in psychological growth, it also promotes engagement in helping behaviors. In one study, nostalgia was shown to increase participants' desire to donate money and time to charities, as well as increase individuals' capacity to empathize with others (Zhou, Wildschut, Sedikides, Shi, & Feng, 2012). All of nostalgia's positive psychological effects make it a tool that is often used in advertising. Nostalgia tends to evoke a feeling of personal experience along with social connectedness, and advertisers take advantage of this. Nostalgia can attract individuals to a product through a sense of connection with the product or company selling the product, influencing the consumer to purchase the product. One study found that state nostalgia reduces an individual's desire for money, making it easier for the individual to part with his or her money (Lasaleta et al., 2014). This can explain why nostalgia makes people feel more charitable, but also why nostalgia works in advertising.

Nostalgia seems to have various positive social and psychological implications. Nevertheless, research also indicates that too much nostalgia is not necessarily positive. Nostalgia tends to be a bittersweet emotion that encompasses not only feelings of

happiness but also feelings of loss and longing for the past (Castelnuovo-Tedesco, 1980; Hepper et al., 2012). Individuals who are prone to engage in maladaptive coping styles or experience depression incur more negative than positive outcomes after nostalgic reverie (Garrdio, 2018). When remembering the past, even in a nostalgic way, individuals predisposed to depression or anxiety may consequently experience increased depression or anxiety, particularly when prone to unhealthy thought patterns and coping styles (Verplanken, 2012). Research has also suggested that nostalgia may be contingent upon traits of propensity for sadness and narcissism (Barrett et al., 2010; Hart et al., 2011).

Although personal nostalgic memories can lead to rumination, it affects anticipatory nostalgia differently. Whereas anticipatory nostalgia lacks exploration as a construct in and of itself, it can be defined as missing aspects of the present before they are lost in the future (Batcho & Shihk, 2016). Anticipatory nostalgia has been shown to hinder an individual's ability to enjoy the present moment, as well as increase an individual's tendencies toward worrying and sadness (Batcho & Shihk, 2016). Nevertheless, although nostalgia has shown that it can be maladaptive in certain instances, for a majority of people, the benefits outweigh the concern of too much nostalgia.

Triggers

Paradoxically, the predominantly positive, self-relevant emotion of nostalgia is triggered most commonly by overall negative affect (Wildschut et al., 2006). Research has indicated that nostalgia is induced by discrete negative affect such as feelings of loneliness (Zhou et al., 2008) as well as more generalized affective states such as negative mood (Wildschut et al., 2006). In addition, nostalgia has been shown to be

triggered by social settings with familiar people, inducing shared nostalgic experience, as well as sensory inputs such as sound and smell (Wildschut et al., 2006). Fascinatingly, cold weather has also been shown to induce nostalgic memories (Zhou et al., 2012). Stressful life events and distressing experiences have also been shown to trigger nostalgia, which has led to implications that nostalgia can serve as a buffer against threats to the self (Baldwin et al., 2015). Although the triggers of nostalgia look to be predominantly negative, the effects and functions of nostalgia seem to be quite the opposite.

Individuals who are experiencing existential threats, depressed mood, and meaninglessness engage in nostalgic remembering and often employ nostalgia as a resource (Juhl et al., 2010; Routledge et al., 2012; Wildschut et al., 2006). Research has also shown that nostalgia is associated positively with adaptive coping strategies such as seeking emotional support (Batcho, 2013). Individuals who have higher levels of trait nostalgia are able to protect against existential threats utilizing the social component of nostalgia (Routledge et al., 2012). Therefore, the triggering of nostalgia is adaptive and mitigates distressing experiences.

Nostalgia, like many other emotions, is subject to the trait-state distinction as it influences behavior, and current research has indicated that trait and state nostalgia affect an individual differently (Newman et al., 2019). A trait is a characteristic that remains stable across time and situations, whereas a state is a reflection of how the individual adapts to a specific situation (Mischel, 1968). Trait nostalgia was correlated positively with more time spent volunteering, donating money, and intending to do charitable work in the future, whereas state nostalgia influenced feelings of empathy toward “suffering

populations” (Zhou, Wildschut, Sedikides, Shi, & Feng, 2012). The integrated trait-state (ITS) model posits that an interaction between both trait and state contribute to differences in observed behavior (Hamaker et al., 2007). Trait nostalgia, otherwise known as person’s proneness or disposition to experience nostalgia, is thought to be stable over time (Baldwin et al., 2015); therefore, individuals who have a higher level of trait nostalgia are more likely to experience nostalgia throughout their daily lives. Conversely, state nostalgia, or momentary nostalgia, can be induced irrespective of an individual’s level of trait nostalgia (Wildschut et al., 2006).

Trait nostalgia influences the effects of state nostalgia, as behavioral expressions of traits are dependent on situational factors, meaning that an individual expresses the effects of nostalgia differently considering situational factors and the extent to which the nostalgic memory was elicited (Mischel, 1968). Induced nostalgia tends to have predominantly positive effects, whereas high levels of trait nostalgia, which causes nostalgia to be experienced in the course of everyday life, tends to have more negative effects (Newman et al., 2019). It seems as though there is a “sweet spot” when it comes to trait nostalgia, as nostalgia serves as a buffer in most cases but experiencing too much nostalgia in daily life can be detrimental to an individual’s well-being. This is deemed the *maladaptive view* of nostalgia, which suggests that individuals prone to nostalgia are more emotionally unstable and experience depression (Sedikides et al., 2006). There is research that shows a positive correlation between the neuroticism personality trait and nostalgia (Barrett et al., 2010), Proponents of the maladaptive view purport that those who are prone to nostalgia are unhappy with the present and unable to deal with the demands of adulthood so they retreat into the past (Castelnuovo-Tedesco, 1980;

Sedikides et al., 2004); however, there is evidence for an integration of both the maladaptive view and the sociality (i.e., psychologically beneficial) view of nostalgia. Research has found that there is an association between nostalgia and neuroticism due to the social content of nostalgia, which is triggered by the need to belong (Seehusen et al., 2013). There is a shared relationship between nostalgia, the need to belong, and neuroticism that can explain the maladaptive view of nostalgia.

Nostalgia Makes Meaning

Terror Management Theory

Overall, nostalgia is considerably psychologically beneficial to the experiencer. Not only can nostalgia promote psychological growth, increase feelings of social connectedness, and decrease stigma, it also serves as a protective factor of sorts. Research suggests that nostalgia is an existential resource and imbues MIL (Routledge et al., 2013). Human need for meaning is a well-research topic, and one of the most substantiated theories related to the need for meaning is terror management theory (TMT; Solomon et al., 1991). According to TMT, individuals perceive their lives as meaningful through striving for self-preservation. This is something not necessarily unique to humans alone, as animals also strive for self-preservation; however, the element of self-preservation that is unique to humans is the cognitive ability to be aware of their own mortality, and conditions that remind humans of mortality can increase death-related anxiety (Solomon et al., 1991). Therefore, TMT proposes that heightened awareness of mortality levels (also referred to as mortality salience) increases meaning seeking in individuals. In line with TMT, research has found that individuals reduce death thought accessibility and psychological distress by increasing MIL (Greenberg et al., 2008; Routledge & Juhl,

2010). Routledge and Juhl (2010) found that individuals who lack perceptions of MIL were more prone to experience anxiety related to mortality salience. A lack of MIL has been found to be a predictor of suicidality when accounting for depression among various populations (Braden et al., 2015; Schnell et al., 2018). Therefore, finding ways to increase MIL can be helpful in reducing death-related anxiety as well as mitigating suicidal ideation.

Evidence that Nostalgia Makes Meaning

Individuals who are prone to nostalgic reverie have been shown to buffer against threat of mortality salience significantly more than those who do not engage in nostalgic thinking as often (Routledge et al., 2008). Correlational research has indicated that nostalgia and meaning have a strong, positive correlation, meaning that increases in nostalgia are related to increases in perceptions of life meaningfulness. Research has found that a trait nostalgia scale, the Southampton Nostalgia Scale, is positively correlated with both the Meaning in Life Questionnaire and Purpose in Life scales, both of which have been used extensively in MIL research (Routledge et al., 2012). A second study also found a positive correlation between state nostalgia and how meaningful the individuals regarded their lives, indicating that a heightening of nostalgia is related to increased feelings of meaning within one's life (Routledge et al., 2012). Recent research purported evidence for a correlation between nostalgia and life meaning in a study that focused on individuals in a work environment. It was found that experiencing nostalgia related to where they work (also known as organizational nostalgia) was positively correlated with meaning found in the work setting, protecting against burnout (Leunissen

et al., 2016), demonstrating that nostalgic feelings about one's job makes the job feel more meaningful.

Correlational research between nostalgia and life meaning is helpful to an extent, but correlation does not equal causation. Researchers in nostalgia recognized this and sought to find experimental evidence that showed nostalgia directly affects life meaning. To find the link between nostalgia and life meaningfulness, researchers created a nostalgia manipulation task entitled the Event Reflection Task (Wildschut et al., 2006). This task has individuals in the experimental condition visualize nostalgic events from their pasts and reflect on these events before writing down key words associated with the nostalgic events (Sedikides et al., 2015). In contrast, participants in the control condition visualize ordinary events from the previous week before writing down key words associated with those events. Nostalgia can be directly manipulated resulting in individuals experiencing more positive emotions, it has been found that individuals generally report high levels of positive affect when compared to control condition participants when manipulating nostalgia (Cheung et al., 2013; Hepper et al., 2012; Zhou, Wildschut, Sedikides, Shi, & Feng, 2012). This is an important finding in regard to meaning, as positive affect is related to the construct of MIL (Baumeister et al., 2013).

In addition to nostalgia increasing positive affect, when manipulated, individuals who experience nostalgia perceive their lives as more meaningful than participants in control conditions (Baldwin & Landau, 2013; Hepper et al., 2012; Sedikides et al., 2018). Nostalgic remembering creates meaning more than reflecting upon a recent past event (Routledge et al., 2012). It has been found that individuals who find meaning in nostalgia decrease their searches for meaning compared to control and comparison conditions

(Routledge et al., 2012). Evidence that nostalgia mitigates threats to meaning not only exists when using an Event Reflection Task, but also through more vicarious inductions of nostalgia. Research has shown that nostalgia invoked through scents and lyrics of songs have equal effects on increasing perceptions of MIL (Reid et al., 2015; Routledge et al., 2012).

Experimentally, nostalgia has been shown to increase positive affect and MIL. Interestingly, nostalgia can be evoked spontaneously and unconsciously from threats to meaning (Routledge et al., 2012), and research has shown that nostalgia is a protective coping mechanism against meaning threat (Routledge et al., 2008; Vess et al., 2012). The evocation of nostalgia decreases defensive responding to threat and buffers against meaning loss (Routledge et al., 2012). When individuals experience mortality salience, they may revert to nostalgia in an attempt to increase feelings of MIL, which has been shown to decrease death thought accessibility (Routledge et al., 2008). Healthy levels of trait nostalgia (i.e., proneness to nostalgia) protect against mortality salience threats to meaning; it is thought that individuals prone to nostalgia have “richer meaning reserves” than individuals who do not engage in nostalgic thinking (Routledge et al., 2008). These findings are not limited to threats to individual identity. Threats to collective identity, national identity, and religious identity have been shown to be buffered by trait nostalgia as well (Juhl et al., 2010; Routledge et al., 2014). Taken together, nostalgia promotes well-being by increasing perception of MIL, alleviating death related anxiety, and buffering against existential threats.

Nostalgia and Meaning

Nostalgic thinking influences an individual's life meaningfulness. As mentioned, nostalgia fosters social connectedness through means of inducing the individual to feel loved, protected, and connected with others (Cheung et al., 2013; Hepper et al., 2012; Zhou et al., 2008), as well as increasing interactions with members of out-group populations and causing individuals to respond more empathically (Routledge et al., 2012; Turner et al., 2012; Zhou, Wildschut, Sedikides, Shi, & Feng, 2012). The themes associated with nostalgia tend to revolve around social interactions and social connectedness, both of which have been shown to be salient sources of MIL (Lambert et al., 2010; Lambert et al., 2013). Nostalgia increases perceptions of life meaningfulness through social connectedness (van Tilburg et al., 2019). It has been hypothesized that nostalgia affects social connectedness which, in turn, strengthens self-continuity (Baumeister, 1991). Self-continuity, sometimes referred to as comprehension/coherence in more recent meaning research, is the degree to which individuals perceive a sense of cohesion from their past lives to their present lives (Baumeister, 1991; George & Park, 2016).

Nostalgia affects a sense of personal MIL, in which the individual believes that his or her life matters (Juhl & Routledge, 2013). Having a sense that one's life, past and present, is important in the world protects life meaningfulness. A personal sense of MIL provides a buffering effect from mortality salience and death thought accessibility (Routledge & Arndt, 2005). Nostalgia has been shown to keep thoughts about death from turning into fear and anxiety about death (Juhl et al., 2010). Not only does nostalgia counteract mortality salience after the fact, it also has been found that it compensates for

threatened meaning and is provoked by threats to existential life meaningfulness (Routledge et al., 2012). Nostalgia seems to affect all aspects of life meaning. It involves self-reflection and bringing the idea of the past self to the present self. Nostalgia's content lies heavily in an individual's perceived significance in the world. Also, nostalgia stimulates intentions to pursue goals (Sedikides et al., 2018), proving that it has motivational consequences. Purpose, which involves goal pursuit, is a motivational component of MIL (Reker & Wong, 2012). This and significance, the other motivational component of MIL, are both affected by the content of the nostalgic memory. Although it is evident that different functions, content, and triggers of nostalgia affect the facets of MIL differently, the individual effects have never been studied at length or within various, specific populations.

Meaning in Life

Much like nostalgia, MIL, or existential meaning, has been studied extensively. MIL garners such research because it is widespread and important to survival (Heintzelman & King, 2014a). Meaning is not tangible but is very much influenced by physical events and stimuli that are interpreted and organized by the human mind in a significant manner (Baumeister & Landau, 2018). Although definitions of meaning can vary, the definition focused on in this paper, in line with previous nostalgia research, relates to the personal level of existential MIL as opposed to the more philosophical question/definition pertaining to the MIL and why humans exist. Like nostalgia, MIL has various definition nuances. One definition of MIL provided in earlier literature is particularly salient: Battista and Almond (1973) defined life meaning as "an individual's belief that he is fulfilling a life framework or life-goal that provides him with a highly

valued understanding of his life” (p.140). Another, more contemporary, salient definition explains that “lives may be experienced as meaningful when they are felt to have a significance beyond the trivial or momentary, to have purpose, or to have coherence that transcends chaos” (King et al., 2006, p.180).

Definitions of MIL vary slightly and there has been little consensus between researchers on the construct (Hicks & King, 2009), causing difficulty with hypothesis testing and generalizability of experimental results (George & Park, 2016). Nevertheless, within the last decade researchers have been working toward creating a consistent definition that is independent of other meaning constructs. The newer definition of MIL is tripartite and revolves around the central, subjective sense of “does one’s existence matter?” The literature, moving toward three themes or subconstructs, covers whether one’s existence is significant, purposeful, and coherent (Antonovsky, 1993; George & Park, 2016; King et al., 2006; Martela & Steger, 2016; Reker & Wong, 2012; Steger, 2012). These three subconstructs within MIL can be broken down into motivational and cognitive components, meaning the pursuit/attainment of goals and making sense of one’s experiences, respectively (Reker & Wong, 2012). Purpose and significance fall under the motivational component whereas coherence is cognitive (Heintzelman & King, 2014b). Taken together, significance, purpose, and coherence allow for individuals to reflectively interpret their lives. Although these three subconstructs concern different dimensions of MIL, they all involve a reflective view into MIL and are connected (George & Park, 2016; Martela & Steger, 2016). The current literature on MIL combines these three subconstructs into a tripartite view of MIL because they are correlated strongly with one another (George & Park, 2016). Nonetheless, they are three distinct

constructs and there is benefit from understanding them not only as a whole, but separately as well.

Significance

One dimension of the tripartite view in MIL is significance, which in the literature is also referred to as mattering or existential mattering (George & Park, 2016).

Significance in MIL refers to the extent that one's existence is important and of value, and a sense that one's life makes a difference in the world (George & Park, 2016).

Significance as a MIL dimension tends to lack explicit empirical concentration (George & Park, 2016), however, significance is an important aspect of MIL that has ties to TMT's sense of personal worth within self-esteem contexts, as well as Ernest Becker's idea of "primary value" (Greenberg, 2012). Essentially, having a sense of significance or mattering in life allows the individual to feel as though his or her life is worth living.

Although significance as an MIL subconstruct has amassed less research than the other two subconstructs, it remains essential in MIL. Significance is particularly salient as a resiliency factor against suicidality, as an individual who feels as though a life is "worth" living is less likely to experience suicidal ideation than an individual who lacks feelings of mattering (Kleiman & Beaver, 2010).

Purpose

Many definitions of MIL include terms that conflate a sense of purpose with MIL (Costin & Vignoles, 2019). Early measures that were designed to measure MIL amalgamate purpose and MIL. This tendency dates back to the Purpose in Life Test (Crumbaugh & Maholick, 1964) and in a more recent, heavily utilized measure on MIL, purpose takes up three of the five questions in the Meaning in Life Questionnaire-

Presence subscale (Steger et al., 2006). Nonetheless, despite purpose's synonymy with MIL, it has been shown to be a distinct construct from meaning (George & Park, 2014; Weinstein et al., 2012). Although specific definitions of purpose vary, much like MIL, the general definition found in the literature indicates that purpose is a future-oriented, motivational construct (Martela & Steger, 2016). Purpose tends to be the most goal-oriented subconstruct in the tripartite view of MIL and involves a feeling of direction within one's life.

Coherence

An important function of MIL is its ability to integrate the past, present, and future (Baumeister et al., 2013). Coherence (also referred to as "comprehension" in the literature; George & Park, 2013, 2016) is the cognitive component of MIL that allows for the individual to make sense of his or her life experiences by drawing patterns from the past to the present (Heintzelman & King, 2014a; Reker & Wong, 2012). This subconstruct of MIL is important, as it has been argued that coherence confers a survival advantage to humans through means of making sense and finding patterns that establish predictability (Steger et al., 2011; Steger et al., 2009). Coherence has been conflated with meaning in past literature in the sense that an individual who understands his or her life meaning must also experience a greater sense of MIL (Steger et al., 2006). Coherence is closely related to self-continuity, which indicates that it may be related to nostalgia. Nostalgia makes meaning through mechanisms associated with self-continuity (Sedikides & Wildschut, 2018); thus, nostalgia can affect a greater sense of coherence, thereby affecting MIL. Coherence is the sense-making subconstruct of MIL and is the most self-relevant in the tripartite model (Costin & Vignoles, 2019).

Protective Factors of MIL

An overall sense of MIL is associated with positive functioning and positive affect (Miao et al., 2017). It has been found that the more positively people view their pasts, the more MIL they experience (Routledge et al., 2008). Given that induced nostalgia is a repository of positive feelings (Routledge et al., 2008) and serves as a positive function for increasing a sense of self-esteem (Cheung et al., 2016), it seems that MIL can be affected positively by nostalgic thinking. Furthermore, a greater sense of MIL is related to higher self-reported physical health (Steger et al., 2009), as well as perceived quality of life in healthy and unhealthy individuals (Dobrikova et al., 2015), especially for the aging population (Krause, 2007). MIL has been linked with decreased mortality (Boyle et al., 2009; Krause, 2009), and individuals who have a high sense of MIL experience slower age-related cognitive decline than their counterparts (Boyle et al., 2010). Greater MIL is a protective factor of psychological disorders, namely depression and comorbid psychopathologies (Marco et al., 2015; Mascaro & Rosen, 2005). Likewise, it has been shown to be a predictor of depressive comorbidity for individuals with HIV (D. E. Lyon & Younger, 2001). MIL has widespread benefits for mental health, including higher levels of well-being (Steger et al., 2006; Thoits, 2012) as well as increased happiness with life and overall satisfaction (Krause, 2007; Steger, 2012). Induced nostalgia has been shown to increase levels of well-being (Newman et al., 2019), which may be another variable in the relationship between nostalgia and life meaning.

As mentioned previously, a strengthened sense of meaning and significance in life has been associated with resiliency from suicidality (Kleiman & Beaver, 2010). MIL has also been shown to reduce incidences of suicide, even when clinical depression is

accounted for (Heisel & Flett, 2004). A sense of MIL is related to increased use of adaptive coping strategies (Miao et al., 2017; Thompson et al., 2003), which can explain why individuals who have a greater sense of MIL experience less depression and suicidal ideation. MIL can be an essential resource in individuals who are coping with stressful life events (Park, 2010), allowing them to cope proactively with such events and recover from trauma (Blackburn & Owens, 2015; Miao et al., 2017).

Meaning

Taken as a whole, the tripartite model and MIL research is significant and having a sense of MIL has been associated with numerous positive benefits and protective factors. Finding MIL is a fundamental motivation for survival (Frankl, 1946/1984). Authors in the literature have discovered that individuals who struggle with finding meaning in their lives also struggle with positive functioning (King et al., 2006). This notion dates back to the work of Frankl (1946/1984), who arrived at the idea whilst recounting his experiences in a Nazi concentration camp (i.e., in order to cope with the suffering humans experience, they seek meaning). One survey that collected data across diverse cultures in the last decade (132 nations, $N = 141,738$) showed that most individuals find their lives to have meaning when asked, “Do you feel your life has an important purpose or meaning?” (mean affirmative response = 91%; Oishi & Diener, 2013). Thus, understanding MIL and its effects on individuals is important because it affects every human and is used as a way to manage distress.

Taking the research and literature on MIL as a whole, it has been shown that humans want meaning, and seek meaning in order to feel as though they are living lives worth living. Therefore, it can be assumed that in order to have a sense that life is

meaningful, one must make meaning. Although there are many ways in which individuals can make meaning, one effective way is through nostalgia, as it has been shown that nostalgia increases positive affect and MIL. Although it is understood nostalgia affects meaning, nothing is known about how nostalgia does this. Further investigation of nostalgia and meaning is warranted, especially when considering the tripartite model of MIL. Now that MIL has been broken down into concise subconstructs in the current meaning literature, exploration of nostalgia's direct impact on meaning as a whole and within various populations is promising.

Research in Meaning and Nostalgia

Nostalgia affects, and even increases, meaning. A recently published research article indicated that the relationship between nostalgia and meaning is through social connectedness and self-continuity (van Tilburg et al., 2019). The study consisted of 1,992 participants ages 12 to 85 across four experiments; participants were recruited from a university in Ireland, a Dutch radio program, and through both in-person volunteers and online resources from residents in Ireland, the Netherlands, and the United States. The study found that self-continuity strengthens nostalgia, self-continuity mediates the effect of nostalgia on MIL, and self-continuity mediates these effects through social connectedness (van Tilburg et al., 2019). Considering the results and implications of the aforementioned study, nostalgia can be viewed as an intervention for individuals vulnerable to meaning-threats. For instance, chronic pain patients who often suffer from loss appraisals involving their senses of self (S. Harris et al., 2003) and chronic deficits in MIL (Anand, 2014) may benefit from engaging in nostalgia as a coping mechanism or utilize it as a MIL intervention. Individuals with chronic pain may be prone to

experiencing nostalgia because of interruptions to self-continuity and self-concept (Hellstrom, 2001). These interruptions are often seen within an individual's feelings of failure related to his or her imagined self and how that compares to the past self, as well as hindrances towards his or her family and friends (Gustafsson et al., 2004). It has been suggested that along with the onset of severe pain, a disturbance of temporal orientation occurs in those experiencing chronic pain, indicating that perceptions of the past, present, and future self can be altered with prolonged pain (Hellstrom & Carlsson, 1997). Pain disrupts self-continuity, as the past self and past view of future possible selves no longer align with the future possible selves (Hellstrom, 2001). For example, an individual in good health may have had certain ideas about his or her future self that may have involved running around and playing with his or her children imagining himself or herself as a "good parent," but this view of possible self can be interrupted after the individual experiences an injury, causing him or her to have chronic pain and limited range of motion. Consequently, the perception of the future self may now include viewing himself or herself as "handicapped" and unable to get on the floor and play with his or her children, leading him or her to imagine his or her future self as a "bad parent." This shift in thinking indicates a shift in self-continuity and self-concept.

In addition, increasing self-continuity within an individual has been linked to adaptability of coping with crises (Sadeh & Karniol, 2012) and positive psychological adjustment and well-being (Chandler et al., 2003; Ryan & Deci, 2001). Therefore, self-continuity could be promoted as an intervention in populations who suffer from discontinuity in life, such as individuals who experience life changing injuries and chronic pain. The connection between nostalgia, self-continuity, and MIL is promising.

The use of nostalgia as a tool, or intervention, especially for individuals struggling with a disconnection of continuity resulting in life meaninglessness stemming from significant life events or injuries, as within the chronic pain population, could prove useful. Thus, further research on an individual's predisposition to utilize nostalgia and its effects on self-continuity within a more specific population, such as individuals with chronic pain, is necessary for understanding nostalgia's benefits and impact on life meaning.

Chronic Pain, Self-Continuity, and Nostalgia

Chronic pain is prevalent within United States adults, affecting roughly 70 million individuals (Dahlhamer et al., 2018). Worldwide, chronic pain affects an estimated 20% of people (Breivik et al., 2006; Gureje et al., 2008). Chronic pain is defined as pain that persists for more than 3 to 6 months past expected healing time (Nugraha et al., 2019). Chronic pain has multitude of possible causes, including damage to bone, tissue, and muscle, as well as psychological stress (Hassett & Clauw, 2011), and can be understood through gate-control theory. The gate-control theory of pain, first published in 1965 by Ronald Melzack and Patrick Wall, posits that mechanisms within the spinal cord act like a gate to inhibit or facilitate transmission of pain signals from the body to the brain; nerves that do not transmit pain can interfere with pain signals and thereby inhibit pain (Melzack & Wall, 1965/1996). Psychological processes can inhibit or facilitate the transmission of pain signals and, in turn, exacerbate or alleviate symptoms of chronic pain (Hassett & Clauw, 2011). Therefore, there is an emphasis on psychological processes and how they affect pain within chronic pain literature.

Unfortunately, individuals who experience chronic pain may experience a great deal of psychological distress as a result and, in turn, struggle with coping with their pain

(Hellstrom, 2001). Individuals with chronic pain often experience loss appraisals involving significant losses within friendships, occupations, and leisure activities, as well as loss of sense of self (S. Harris et al., 2003). It is worth noting the difference between nostalgia and retrospective loss appraisal, as they are similar. Considering that nostalgia involves looking back as much as retrospective loss appraisals, differences arise in the content and triggers. Retrospective loss appraisals are not “bittersweet” and often involve focus on abilities and activities that the individuals used to be able to engage in with ease, which results in perceptions of loss (S. Harris et al., 2003; Rhodes et al., 1999). Nostalgia reverie, on the other hand, involves momentous events and a focus on the “good feelings,” which often involves perceptions of fondness associated with the memory rather than perceptions of loss (Wildschut et al., 2006).

In addition to loss appraisals, individuals who suffer from chronic pain may experience threat appraisals, with the pain stimulus viewed as threatening, which has been associated with negative emotional responses and poor coping strategies (Jackson et al., 2014). Threat appraisals involve a hyper-focus on pain stimuli, which can reduce an individual’s ability to attend to other stimuli. This hypervigilant focus can cause resistance in the individual experiencing pain to engage in other activities that may increase pain or discomfort (A. Martin et al., 2010). This resistance may become so severe that the individual avoids engaging in any activity that he or she believes will increase discomfort, including forms of basic movement; in the most severe cases, this is known as a fear of movement or kinesiophobia (Gregg et al., 2015). Kinesiophobia and threat appraisals not only affect the individual’s ideas about his or her capability, but his or her identity as well (Jackson et al., 2014).

According to identity theory, definitions of meaning are attached to the self and built around role designations (Stryker, 1987). Accordingly, when an individual suffers from chronic pain, he or she often loses his or her identity and role designations, often leading to changes from capable to incapable. For example, an individual who experienced a workplace accident resulting in chronic pain, ultimately causing him or her to no longer be able to work, may have the role designation change from “self-sufficient, hardworking construction worker” to “useless, lazy, and unemployable.” Obviously, this role designation change can have severe psychological consequences. Chronic pain and pain-related factors, such as sleep problems, are significantly related to experiences of catastrophic thinking, depression, anxiety, kinesophobia, and suicidal ideation among various populations (Cheng et al., 2018; Kosson et al., 2018; Lewcun et al., 2018; Noyman-Veksler et al., 2017; Racine, 2018)

Taken together, chronic pain can be debilitating physically and psychologically. Thus, individuals with chronic pain often attempt to cope in various ways, some of which are more helpful than others. Coping mechanisms that have been shown to be helpful within the chronic pain community include increasing self-efficacy and resiliency (Rolbiecki et al., 2017), perceptions of social support in the form of encouragement (McWilliams et al., 2017), pain acceptance (Carvalho et al., 2018), and reidentifying and strengthening perceptions of MIL (Anand, 2014; Hellstrom, 2001). Within the chronic pain population, there seems to be a disconnect between individuals’ past selves and their current selves. Interestingly, the ways in which nostalgia affects an individual through increasing MIL by increasing social connectedness and self-continuity can prove to be an effective coping strategy for individuals with chronic pain. MIL can enable individuals to

manage and cope with their pain, and nostalgia can increase MIL by establishing stronger social connection and eliciting self-continuity. Therefore, a further investigation of how people with chronic pain experience nostalgia is warranted. Individuals who experience chronic pain may be more prone to nostalgic thinking, as nostalgia could act as a coping mechanism and protective buffer against threats to overall MIL.

Summary

Research on nostalgia has increased immensely in the last decade. What was once a debilitating neurological/psychological disorder is now thought to be a self-relevant, more positive than negative emotion. Experiencing nostalgia has positive effects on the person experiencing it and, among the numerous positive effects that nostalgia elicits, an increased MIL is one of the most impressive. MIL research has also evolved in the last decade. Current research has found that MIL can be broken down into the three subconstructs of significance, purpose, and coherence. Although it is known that nostalgia positively affects MIL as a whole and helps people attain life meaning, it is unknown how MIL is affected by nostalgia within the chronic pain population, a population riddled with disturbances in MIL. The aim of this study was not only to understand the extent to which nostalgia affects the separate subconstructs in MIL within this population in order to address the current gaps in the literature, it also aimed to provide a framework for the use of nostalgia as a coping mechanism. For example, it was hoped that if coherence was found to be greatly impacted by nostalgia, then specific nostalgic queuing (i.e., nostalgia prompting questions specific to self-continuity, e.g. “Think of a fond memory from your childhood that resonates with who you are today.”) could be utilized within the chronic pain population to most effectively use nostalgia as a

therapeutic technique in coping with pain. Therefore, this study's aim of examining how nostalgia specifically affects each subconstruct of MIL was developed in order to offer insight into the underlying functions of nostalgia, in order to provide implications for clinical use within this specific population. This understanding of nostalgia and life meaning can also provide an expansion of the newer reminiscence therapy, which utilizes items from the past to evoke memories and assist in coping for dementia patients. An understanding of which subconstruct nostalgia affects would allow for more effective utilization of nostalgia within therapy. Clinicians would also better understand nostalgia as a technique, and further knowledge would lend clinicians to better know how nostalgia functions with MIL and be able to implement nostalgia effectively as a tool within diverse populations.

CHAPTER 3: METHOD

Design and Design Justification

The current study utilized a correlational design using surveys to examine how trait nostalgia affects the three subconstructs of MIL. Data were collected through the use of validated self-report questionnaires. The relationship between nostalgia and MIL has been established in the literature, and this study measured the outcomes of three subconstructs of life meaningfulness (significance, purpose, and coherences) when accounting for the level of trait nostalgia. This design allowed the researcher to identify how trait nostalgia affects the three subconstructs in the MIL scale within a chronic pain population. Lastly, this design also allowed for the researcher to identify the overall relationship between nostalgia and MIL within this specific population.

Participants

Participants were recruited from one location in southern New Jersey, ReclaimAbility Pain Services, a medical pain practice with four total locations.

New or established patients at the pain practice who signed the consent form were permitted to participate. Each participant was provided a consent form along with the measures after checking in for his or her appointment.

Participants were at least 18 years old and reported that they were currently seeking or receiving treatment for chronic pain conditions. Participants' races, ethnicities, and genders varied.

Measures

Demographic Survey

A demographic questionnaire was completed prior to the experimental assessments. The questionnaire asked participants about the following information: age, gender, length of time of experienced pain, and current severity of pain. These items followed two forced choice questions to determine eligibility: The questions pertaining to inclusion criteria asked potential participants to provide yes/no responses to whether they were 18 years or older, whether they had at least an 8th grade reading level, and whether they were currently seeking treatment for chronic pain. The remainder of the demographic questionnaire was constructed with both forced choice responses as well fill in the blank responses; that is, gender (male/female/other), pain severity (1-10 scale), and length of time of experienced pain (___ years).

Southampton Nostalgia Scale

The Southampton Nostalgia Scale (SNS) is a five-item self-report assessment of trait nostalgia, i.e. the propensity of the individual to experience nostalgia. Four items on the scale are rated on a 7-point Likert scale (1 = *very rarely/not at all*, 7 = *very frequently/very much*), and one item on the scale is a forced choice response asking “how often do you bring to mind nostalgia experiences,” allowing participants to indicate their responses ranging from *at least once a day* to *once or twice a year* (Routledge et al., 2008). The forced choice question has seven possible answers and is scored in a reversed manner compared to the other four questions. The minimum score a participant can attain is 5, and the maximum score is 35. Higher overall scores on this scale indicate greater nostalgia proneness. A score of 20 or higher indicates a high level of nostalgia proneness.

For the present study, groups were created based on participants' scores on this measure, with scores below 20 constituting membership in the low trait nostalgia group and 20 or above constituting membership in the high trait nostalgia group.

This measure has been shown to have good reliability, including internal consistency ($\alpha = .92$); independent studies have shown the SNS correlates with established measures of nostalgia proneness, such as the Batcho Nostalgia Inventory (Batcho, 1995; Routledge et al., 2008).

Manipulation Check

Participants were asked to rate a validated two-item assessment that was designed by authors in the literature (Wildschut et al., 2006) to check the nostalgia manipulation effect from the SNS. This was done in order to ascertain whether the administration of the SNS impacted state nostalgia, which may have an effect on responses to the MIL scale. These items were rated on a 7-point Likert scale (1 = *strongly disagree*, 7 = *strongly agree*). The items asked participants to respond to the following statements: “Right now I am feeling quite nostalgic” and “Right now, I’m having nostalgic feelings.” The two items have a minimum score of 2 and a maximum score of 14; a score of 9 or higher indicates successful nostalgia manipulation. The reliability of this manipulation check is high ($\alpha = .96$, $\alpha = .98$; Cheung et al., 2016; Wildschut et al., 2006, 2010; Zhou et al., 2008).

The Multidimensional Existential Meaning Scale

The Multidimensional Existential Meaning Scale (MEMS) is a 15-item self-report measure of MIL (George & Park, 2016), and was administered to participants following the SNS. George and Park (2016) created the MEMS in an attempt to offer more

conceptual accuracy when measuring MIL than existing measures. MEMS conceptualizes a tripartite view of MIL, including the subconstructs of comprehension, purpose, and mattering, which are recently the most studied constructs within MIL research (George & Park, 2016; Heintzelman & King, 2014b; Martela & Steger, 2016). Within this measure, the comprehension subscale measures self-continuity. Each of the subscales consists of five items with responses rated on a 7-point Likert scale (1 = *very strongly disagree*, 7 = *very strongly agree*). Item 2 is reversed scored. The current study used the subscales to determine whether nostalgia affects one of the subconstructs more than the others. Examples of items include “My life makes sense” (measuring comprehension), “I have aims in my life that are worth striving for” (measuring purpose), and “I am certain that my life is of importance” (measuring mattering). Each subconstruct has a minimum score of 5 and a maximum score of 35, with higher scores indicating the participant’s greater sense of that subconstruct.

Cronbach’s alphas of the MEMS subscales were computed over three administrations, yielding average alphas of .90, .89, and .86 for the comprehension, purpose, and mattering subconstructs, respectively, indicating good internal consistency (George & Park, 2016). Test-retest reliability was found to be 0.75 for comprehension, 0.75 for purpose, and 0.85 for mattering (George & Park, 2016). MEMS subscales have been shown to be consistent with other MIL measures, with correlations falling between 0.60 and 0.80 (George & Park, 2016). MEMS subscales have also been shown to have predictive validity with other MIL measures (George & Park, 2016).

Kessler-6

The Kessler-6 (K6) scale is a six-question self-report measure designed to measure nonspecific psychological distress (Kessler et al., 2003). Of the six questions on the K6, question 1 asks, “During the last 30 days, about how often do you feel...” and includes sub-items such as “...nervous?” “...hopeless?” and “...that everything was an effort?” The items are rated on a 5-point Likert scale (1 = *all the time*, 5 = *none of the time*). Question 2 on the K6 inquires whether the feelings reported in question 1 occur more often than usual or less often on a 7-point scale. Questions 3 through 6 are not to be answered if they reported “none of the time” to all six of the items in question 1. Questions 3 through 5 are recorded in number of days and asks questions such as “How many days out of 30 were you totally unable to work or carry out your normal activities because of these feelings?” The sixth question is rated on a 5-point Likert scale (1 = *all the time*, 5 = *none of the time*) inquiring, “How often have physical health problems been the main cause of these feelings?”

In order to ascertain the level of nonspecific psychological distress, the K6 is converted to a 0 to 24 scale for question 1, and each item is coded from 0 to 4. Questions 2 through 6 on the K6 are supplementary and not required for scoring; responses to these questions were used in the present study to describe the data in a more meaningful manner. Specifically, question 6 was examined to ascertain whether health conditions are related to endorsement of psychological distress or wellness. The cutoff-point for psychological distress is 13 or lower on the 0 to 24 scale. Scoring a 13 or higher indicates psychological wellness, scores below 12 indicate psychological distress, and severe mental illness is indicated with scores lower than 9 (Kessler et al., 2003). The K6 cutoff-

point is optimized with fair sensitivity at 0.36 (0.08) and good specificity 0.96 (0.02), accurately identifying participants without psychological distress, as well as good total classification accuracy at 0.92 (0.02; Kessler et al., 2003). Internal consistency for the K6 is high ($\alpha = .89$). The K6 is a validated measure that has good precision in the 90th to 99th percentile range of the population distribution, with consistent psychometric properties (Kessler et al., 2002).

Procedure

Prior to recruitment of participants, approval from the Philadelphia College of Osteopathic Medicine Institutional Review Board was obtained.

A description of the study was disseminated within the new patient and follow-up visit paperwork at ReclaimAbility in southern New Jersey. Informed consent was obtained from every participant. The informed consent document expressed the voluntary nature of the study. No identifying information was collected during any portion of the survey. Data collected were coded by the researcher and imported into an Excel spreadsheet before being imported directly into the SPSS computer analysis program once data collection was complete.

The recruited participants reviewed the consent form and decided whether they would like to participate. The informed consent document provide a brief description of the present research as well as an explanation pertaining to the anonymity of the study, expressly stating that no identifying information would be collected and the participants are not obligated to complete the survey if they do not wish to. Within the survey packet, participants were required to answer three questions to determine inclusion eligibility: “Do you have an 8th grade or above reading level?” “Are you over the age of 18?” and

“Do you identify as a person who experiences chronic pain?”. Participants were deemed ineligible to participate if they answered any of these questions with “no.” If deemed ineligible, the survey packet was destroyed.

Participants were recruited in the waiting room of ReclaimAbility Pain Practice in southern New Jersey. The researcher approached participants while they waited for their appointments. First, each participant was informed of the voluntary nature of the study and offered an opportunity to participate in the research. Upon agreeing to participate, each participant was administered the informed consent document. Once he or she read and signed the informed consent document, the research surveys were administered. The surveys were paper-and-pencil and began with a brief demographic survey inquiring about gender, age, how well pain is currently managed, and length of pain experience. Then, the self-report questionnaire packet was administered. The first assessment given was the SNS, followed by the MEMS and the two-item manipulation check of nostalgia. This manipulation check ascertained whether trait nostalgia, not state nostalgia, was being measured during the survey. The final portion of the survey packet was the K6, measuring psychological distress. Once the participant finished completing the survey, he or she returned the paperwork to the researcher. All participants were provided with the pain practice’s list of mental health resources upon completion of the surveys. The questionnaires were kept separate from the patients’ medical charts and personal information. Completed questionnaires were coded, put into sealed folders, and secured in a locked file cabinet in a locked office room. Before the questionnaires were secured, data were coded into an Excel spreadsheet by the researcher. Once data collection was completed, the Excel file was imported into the SPSS computer analysis program.

CHAPTER 4: RESULTS

Descriptive Statistics

A total of 132 individuals were asked to participate in the current study. Thirty individuals declined to participate, and 12 individuals chose not to complete the survey after beginning the questionnaire. Ninety participants completed questionnaires for the present study. Of the 90 individuals who completed questionnaires, all met the inclusion criteria for participation. The sample was 64.4% female ($n = 58$), 33.3% male ($n = 30$), 1.1% other ($n = 1$), and 1.1% of participants chose not to identify their genders ($n = 1$). The age range of participants in the study was between 26 and 85 years, and the mean age of participants was 57.3 years. Participants reported experiencing pain for a mean of 13.6 years. The mean current pain level amongst the participants reported at the time of the administration of the questionnaires was 6.8 on a scale of 0 to 10, with 10 being the worst pain ever felt ($SD = 1.98$). The average pain level reported by the sample falls into the moderate pain category, indicating that the pain interfered significantly with activities of daily living (McCaffert & Beebe, 1993). For a breakdown of the means and standard deviations for age, and the main measures of the study including current pain level, pain experience, quality of nostalgia, MIL, subconstructs of MIL, and psychological wellness, see Table 1.

For the purposes of testing the hypotheses, participants were broken into two groups based on their levels of trait nostalgia. Participants who scored lower than 20 on the SNS were placed into the “low trait nostalgia group” and participants who scored 20 or above were placed into the “high trait nostalgia group.” The mean age of the participants in the low trait nostalgia group ($n = 15$) was 60.7 years old. The mean current

level of pain for the low trait nostalgia group was 6.5 and the mean length of pain was 13.6 years. The mean age of participants in the high trait nostalgia group ($n = 75$) was 56.7 years old. The mean level of current pain for the high trait nostalgia group was 6.9 and the mean length of pain was 13.6 years. In both groups, the quality of nostalgia was positive. Table 2 provides a detailed breakdown of the low and high trait nostalgia group descriptive statistics.

Table 1

Descriptive Statistics for Entire Sample (N = 90)

	Minimum	Maximum	Mean	SD ^a
Age	26	85	57.34	11.46
Current Pain Level	1	10	6.82	1.98
Length of Pain	1	51	13.61	10.05
Quality of Nostalgia ^b	1	7	3.08	1.79
Manipulation	3	14	6.32	3.51
Meaning in Life	31	105	81.73	18.74
Comprehension	7	35	26.70	7.27
Purpose	12	35	28.38	6.29
Mattering	8	35	26.66	7.02
Psychological Wellness ^c	3	24	16.98	5.10

Note: age, current pain level, and pain length are reported in years; ^a SD = standard deviation; ^b reflects the score participants gave to the overall quality of their nostalgia, with 7 being mostly negative and 1 being mostly positive; ^c higher scores on this measure equate to psychological wellness, whereas scores lower than 9 equate to significant psychological distress

Table 2*Low and High Trait Nostalgia Group Descriptive Statistics*

	Nostalgia Group	Minimum	Maximum	Mean	SD ^a
Age	Low Trait ^b	38	81	60.71	10.98
	High Trait ^c	26	85	56.67	11.50
Current Pain Level	Low Trait	3.5	9	6.47	1.56
	High Trait	1	10	6.89	2.06
Length of Pain	Low Trait	1	29	13.6	7.37
	High Trait	1	51	13.61	10.55
Quality of Nostalgia ^d	Low Trait	1	4	1.87	1.13
	High Trait	1	7	3.32	1.81
Manipulation	Low Trait	2	4	2.40	.828
	High Trait	2	14	7.11	3.31
Meaning in Life	Low Trait	70	105	93.60	11.99
	High Trait	31	105	79.36	19.00
Comprehension	Low Trait	23	35	31.40	4.22
	High Trait	7	35	25.76	7.41
Purpose	Low Trait	12	35	31.07	6.56
	High Trait	12	35	27.84	6.14
Mattering	Low Trait	16	35	31.13	5.50
	High Trait	8	35	25.76	6.98
Psychological Wellness ^e	Low Trait	15	24	20.40	2.23
	High Trait	3	24	16.29	1.29

Note: ^a SD = standard deviation; ^b N = 15; ^c N = 75; ^d reflects the score participants gave to the overall quality of their nostalgia, with 7 being mostly negative and 1 being mostly positive; ^e higher scores on this measure equate to psychological wellness, whereas scores lower than 9 equate to significant psychological distress

Analysis of Hypotheses

Hypothesis 1

A correlation analysis was performed to test the hypothesis that there would be a relationship between nostalgia and MIL. All assumptions (linearity, normality, homogeneity of variance, and independence; Field, 2013) were met for Hypothesis 1. An examination of the histograms revealed normally distributed variables, a scatterplot matrix was conducted and revealed linearity and no outliers were detected. The assumption of independence was met as observations within and between groups were independent.

Pearson correlation coefficients were used to evaluate the relationships between trait nostalgia and life meaning, as well as between the groups of high trait nostalgia and life meaning and low trait nostalgia and life meaning. Hypothesis 1 proposed that trait nostalgia would correlate positively with life meaningfulness. Pearson correlation analysis did not reveal a statistically significant correlation between trait nostalgia and life meaningfulness, $r = -.171, p > .05$ (see Table 3). Further and contrary to the hypothesized results, a Pearson correlation analysis did not reveal a statistically significant relationship between the high trait nostalgia group and life meaningfulness, $r = .104, p > .05$. In contrast, a Pearson correlation analysis revealed a statistically significant negative correlation between the low trait nostalgia group and life meaningfulness, $r = -.539, p < 0.025$ (Table 3). This finding indicated that individuals who use nostalgia less experience a higher sense of life meaning within this chronic pain population, which was counter to expectation.

Hypotheses 2 and 3

A MANOVA was conducted to determine whether higher levels of trait nostalgia would be related to higher levels of self-continuity (Hypothesis 2) and whether higher levels of trait nostalgia would be related to higher levels of psychological wellness (Hypothesis 3). The following assumptions must be met when conducting a MANOVA: a normal distribution, linearity, absence of multicollinearity, and equality of covariance matrices (Field, 2013). For the distribution to be normal, outliers should be tested prior to computing a MANOVA and dependent variables should be normally distributed within the groups. An examination of histograms revealed normally distributed variables. To ensure linear relationships between the dependent variables, a scatterplot matrix was visually inspected, and a linear relationship was observed. The assumption of absence of multicollinearity was verified by ensuring that the correlation levels between the two dependent variables did not exceed .90. Multicollinearity was not observed between the dependent variables, $r = .60$, $p < .01$ and, therefore, this assumption was not violated. To test the assumption of homogeneity of covariance, the Box's M test of equality of covariance matrices was conducted. This tests the null hypothesis that the covariance matrices of the dependent measures are equivalent across groups. Box's M test was found to be 16.901 and significant at the .001 level, violating the assumption of covariance. According to Field (2013), Box's M test can be disregarded if it is not significant at a level less than .001, further it can be assumed that Pillai's statistics are robust.

Using Pillai's Trace, there was a significant difference found between trait nostalgia on the dependent variables and interaction of self-continuity and psychological wellness, $F(2,87) = 5.35$, $p < .01$, $\Lambda = .11$, $\eta^2 = .110$. Further, there was a statistically

significant difference between trait nostalgia and self-continuity, $F(1,88) = 8.12, p < .01$, as well as a statistically significant difference found between trait nostalgia and psychological wellness, $F(1,88) = 8.796, p < .01$. Contrary to hypothesized results of the second hypothesis, individuals who endorsed low trait nostalgia were found to have a higher sense of self-continuity ($M = 31.4, SD = 1.18$) than those who endorsed higher levels of trait nostalgia ($M = 25.76, SD = 0.81$). Further, and contrary to the third hypothesis, individuals who endorsed low trait nostalgia also endorsed higher levels of psychological wellness ($M = 20.4, SD = 1.26$) than individuals who endorsed high levels of trait nostalgia ($M = 16.29, SD = 0.57$).

Additional Analyses

A MANOVA was conducted to investigate the differences between trait nostalgia within the other two subscales on the MEMS, purpose and mattering. The aforementioned assumptions tested in Hypotheses 2 and 3 were also tested for these additional analyses. The assumptions, including normally distributed variables, linearity between dependent variables, and an absence of multicollinearity between dependent variables ($r = .728, p < 0.05$) were met; however, the assumption of equality of covariance was violated (Box's $M = 14.78, p < .01$). As mentioned previously, according to Field (2013), Box's M can be disregarded if it is not significant at a level less than .001, further it can be assumed that Pillai's statistics are robust.

There was no significant relationship found between nostalgia and the dependent variable of purpose, $F(1,88) = 3.38, p = .069; \eta^2 = .037$. Using Pillai's Trace there was a significant difference found between trait nostalgia on the dependent variable of mattering, $F(1,88) = 7.89, p < .01; \eta^2 = .082$. Those who endorsed low levels of trait

nostalgia experienced a higher sense of life significance ($M = 31.13$, $SD = 1.75$) than those who endorsed high levels of trait nostalgia ($M = 25.760$, $SD = 0.78$).

An ANOVA was also conducted to investigate the differences between the levels of trait nostalgia on life meaningfulness as measured by the MEMS. To conduct an ANOVA, three assumptions must be met: normality, homogeneity of variances, and independence of samples. An examination of histograms revealed normally distributed variables. Levene's Test was not found to be significant, $F(1,88) = 2.52$, $p > .05$; therefore, homogeneity of variance can be assumed. Independence of samples assumption was met. The results of the ANOVA revealed a statistically significant difference found between the levels of trait nostalgia and life meaningfulness, $F(1,88) = 7.76$, $p < .01$; $\eta^2 = .081$. Participants who endorsed low levels of trait nostalgia also endorsed a higher perception of overall life meaningfulness ($M = 93.6$, $SD = 11.99$) than participants who endorsed high levels of trait nostalgia ($M = 73.36$, $SD = 19$).

A final ANOVA was conducted to investigate what differences, if any, could be found between the levels of trait nostalgia and the K-6 descriptive question "During the past 30 days, how often have physical health problems been the main cause of these feelings?" The aforementioned assumptions were tested and met. The results of the ANOVA suggested that there was no statistically significant difference between trait levels of nostalgia and the participants' attribution of physical health problems to their levels of psychological distress, $F(1,88) = 0.001$, $p > 0.05$. There were no differences found between participants' levels of propensity to experience knowledge and their attributions of psychological distress to health problems.

Table 3*Correlations between Levels of Nostalgia, Meaning in Life, and Psychological Wellness*

	Meaning in Life	Psychological Wellness
Total Sample Nostalgia	-.171	-.308 ^a
High Trait Nostalgia	.104	-.125
Low Trait Nostalgia	-.539 ^b	-.216

^acorrelation is significant at the 0.01 level (1-tailed); ^b correlation is significant at the 0.05 level (1-tailed)

CHAPTER 5: DISCUSSION

The current study investigated the relationship between nostalgia, self-continuity, and psychological wellness within a chronic pain population. Self-continuity is an important component in nostalgia's effects on life meaningfulness and psychological wellness within the general population (Sedikides & Wildschut, 2018). The current research theorized that nostalgia and self-continuity would also be relevant specifically within the chronic pain population. In addition, nostalgia is related to a higher sense of MIL (Routledge et al., 2013), a higher sense of self-continuity (Wildschut et al., 2006), and a psychological wellness in the general population (Kersten et al., 2016); the current research attempted to replicate these relationships in the chronic pain population.

Overall, the present research did not find a significant relationship between trait nostalgia and life meaningfulness. Life meaningfulness is defined by the present research as it pertains to a personal existential meaning, focusing on the question "does one's existence matter?" Although the relationship approached significance, it was not statistically significant. This is counter to what was expected, as previous research has found relationships between trait nostalgia and life meaningfulness many times across various populations (Leunissen et al., 2016; Routledge et al., 2008; Routledge et al., 2012). Interestingly, a significant negative correlation was found between the low trait nostalgia group and life meaningfulness. Participants who reported that they were less likely to experience nostalgia endorsed significantly higher levels of life meaningfulness. This finding is contrary to what was expected and does not support Hypothesis 1. The high trait nostalgia group was not found to have a statistically significant relationship with life meaningfulness.

The analyses conducted for Hypotheses 2 and 3 revealed a statistically significant relationship between trait nostalgia and self-continuity as well as between trait nostalgia and psychological wellness. These findings, however, were opposite of the expected direction. The low trait nostalgia group endorsed higher levels of self-continuity and psychological wellness compared to the high trait nostalgia group. These findings run counter to the literature on nostalgia and its positive psychological impacts, but these benefits may not translate to the chronic pain population. It could be, for example, that the coping mechanisms employed by the chronic pain community involve focusing on the present and the future, rather than utilizing nostalgia for the past.

Further, the present study found a statistically significant relationship between trait nostalgia and the mattering subconstruct of life meaningfulness. Similar to the current study's previous findings, participants who reported that they were less likely to engage in nostalgic thinking endorsed higher levels of life significance and feelings of mattering. Both self-continuity and mattering were significant for the patients in the low nostalgia group, and yet they experienced significantly higher levels of psychological wellness. Acceptance and mindfulness-based approaches are becoming ever popular for the therapeutic treatment of chronic pain (McCracken & Vowles, 2014). Within these therapies, focus is shifted from the past to the present, and acceptance and non-judgment of the pain and body is crucial to improve function, psychological flexibility, and wellness (Veehof et al., 2016). Therefore, it may be that the low trait nostalgia group is using a different means of coping with their chronic pain—perhaps an acceptance and mindful-based way of coping—as opposed to finding life meaningfulness through nostalgia as previously hypothesized.

A final analysis was conducted looking at health problems, such as chronic pain, being the cause of psychological distress within the pain community. Following the psychological wellness subscale, participants were asked, “During the past 30 days, how often have physical health problems been the main cause of these feelings?” If a participant endorsed feelings of distress, he or she was then asked to indicate how much of the time this distress was due to physical health problems. No statistically significant relationship was found between trait nostalgia and the endorsement of physical complaints relating to psychological distress.

Implications

Much of the research on nostalgia has supported the relationship between higher levels of trait nostalgia and higher perceptions of life meaningfulness and higher degrees of psychological wellness (Routledge et al., 2008; Wildschut et al., 2006). Nostalgia has often been portrayed as a positive, social emotion elicited by individuals as a coping mechanism, particularly in the service of buffering existential threats. In addition, researchers have found that the connection between high trait nostalgia and a higher sense of comprehension in MIL indicates that self-continuity is integral to nostalgia’s effect on perception of MIL. Self-continuity is strengthened by social connectedness and self-esteem (Lambert et al., 2010; Lambert et al., 2013), and nostalgia has been shown to strengthen feelings of social connectedness and self-esteem (van Tilburg et al., 2019). Nevertheless, despite these relationships uncovered in the general population, the opposite was found within the chronic pain population in the current study. There is also research that suggests life significance is inherent to MIL (Hibberd, 2013), and although research has shown that nostalgia bolsters a sense of the self and how much one

“matters” (Juhl & Routledge, 2013), the opposite also seems to ring true for the chronic pain population and nostalgia is not having the same effect.

Trait nostalgia as a whole was not positively correlated with life meaningfulness in this study and, in fact, low trait nostalgia was significantly negatively correlated with MIL. The less likely the participant was to endorse nostalgia thinking, the higher the perception of MIL. Although this contradicts previous research, previous research was conducted with the general population. The chronic pain community may view their pasts and entire life trajectories in a vastly different manner than the general population. Research has shown that chronic pain threatens individuals’ perceptions about what is meaningful in their lives while also creating distress over whether their lives can be meaningful again (Dezutter et al., 2015). Oftentimes, individuals who begin to experience chronic pain have to revise life goals due to their loss of ability and motivation as a result of the pain (Pinquart et al., 2009). Losing the ability to engage in activities often results in altering of goals, which affects life meaningfulness. Not only is life meaningfulness affected, psychological wellness is as well (deRoos-Cassini et al., 2009; B. W. Smith & Zatura, 2004). There is a link between life meaningfulness and psychological wellness in the chronic pain population and the general population alike (Hadden & Smith, 2019; Hellstrom, 2001; Routledge et al., 2012). However, unlike the general population, that link is not serviced through nostalgia for the chronic pain population.

Themes that are generally associated with nostalgic reverie center around momentous life events. These life events may be ones that occur prior to pain onset for the chronic pain patient. Therefore, there may be a pronounced disconnect between what life was and what life is now, causing rifts within perceptions of life meaning and

continuity. The present study found that higher levels of trait nostalgia were not correlated with heightened perceptions of life meaningfulness. Conversely, low levels of trait nostalgia were found to be related to heightened perceptions of life meaningfulness when compared to the high trait nostalgia group. Nostalgic memories seem to affect the chronic pain population in a way that is similar to retrospective loss appraisals. Loss appraisals involve focusing on the abilities and activities that the individuals used to engage in with ease, eliciting a sense of loss (S. Harris et al., 2003). Previous research assumed that nostalgia involves a focus on perceptions of fondness associated with momentous life events, eliciting a sentimental feeling; however, in the chronic pain population, these two types of thinking about the past may be mutually exclusive. When a chronic pain patient thinks about a momentous life event from his or her past, for instance scoring the game winning goal in the playoffs, he or she may bring to mind the positive emotions that came with scoring that goal, but this may also bring to mind feelings of grief associated with the loss of ability to be active and play sports as well as loss of future opportunities for additional achievements.

Thinking nostalgically may also elicit threat appraisals within individuals. Threat appraisals within the chronic pain population arise from perceptions of harm and loss when facing tasks (Ramirez-Maestre et al., 2008). This may occur for the chronic pain patient when attempting to engage in an activity or task related to a goal that was once easily attainable but is no longer as attainable due to chronic pain. The individual either views the task as a challenge or a threat, and coping ability is impacted by the view adopted. The present research found that although low trait nostalgia was correlated with psychological wellness, high trait nostalgia was not. In fact, within the present study, the

high trait nostalgia group had a handful of participants fall into the range of severe psychological distress, whereas the low trait nostalgia group did not have any participants fall past the cutoff-point for psychological distress. This may indicate that individuals who are using nostalgic thinking more frequently may also be engaging in viewing tasks as threats rather than challenges, as the experience of threat appraisals have been linked with psychological distress (Jamieson, 2017). Recent research investigating the relationship between nostalgia and threat appraisals in an educational setting revealed that threat appraisals were predictive of increased use of nostalgia (Bialobrzaska et al., 2019). Because nostalgia is often triggered during negative affective states, the authors of the research interpreted their finding of increased nostalgia being due to the distress caused by threat appraisals. This could be the case for the chronic pain sample in the present study. Individuals who are likely to engage in nostalgic thinking may be doing so as a result of the distress caused from the threat appraisals; however, nostalgia in this case could be a double-edged sword, in that nostalgic thinking could result in perceiving tasks as threatening rather than challenging, thereby exacerbating distress. For instance, an individual with chronic pain who engages in nostalgic reverie may be reminded of his or her past abilities and, much like a loss appraisal, may cause him or her to think about what he or she is no longer able to do or what he or she may be unable to do in the future. Therefore, the nostalgic thinking may elicit threat appraisals related to the perception that he or she will not have the ability to engage in tasks with ease in the future, which can lead to more engagement of nostalgic thinking, as was found in recent research (Bialobrzaska et al., 2019). This idea makes a case as to why the individuals in

the high nostalgia group may be experiencing more psychological distress than individuals in the low nostalgia group.

Adaptively, individuals with chronic pain may actively avoid thinking nostalgically to circumvent the loss appraisals that coincide with it. This may increase their sense of life meaning, as they are not reminding themselves of what was; rather, they are focusing on what is. This thought is in line with a recently popular therapeutic treatment for chronic pain, acceptance and commitment therapy, which takes a mindfulness-based approach that focuses on the here and now (McCracken & Vowles, 2014). Focusing on present values allows the patient with chronic pain to imbue a sense of MIL without relying on the past or future to provide meaning (Lander & Nahon, 2016). Having a sense of life meaningfulness is an integral part of positive coping within the chronic pain population. Individuals with chronic pain who experience heightened perceptions of life meaningfulness have been shown to experience less pain intensity and display a sense of resilience, allowing them to engage in activities in the present, as well as cope with and adjust to their pain (Sheedy et al., 2017).

Notably, pain experiences between both the low nostalgia and high nostalgia groups in this study were similar. Both groups reported a moderate amount of pain, with the low trait nostalgia group reporting an average of 6.47 and the high trait nostalgia group reporting an average of 6.89 on a 10-point scale. In addition to this finding, the low nostalgia group experienced a higher sense of life meaning than the high nostalgia group. This finding should be investigated further in future research, as there may be another factor affecting pain intensity levels within this population that is unrelated to perceptions of life meaning. Although it may be that chronic pain patients who are less inclined to

think nostalgically protect their senses of MIL by avoiding the loss appraisals, this does not explain the findings of similar pain intensity across both low and high nostalgia groups.

Another significant finding in this study that is of interest is that trait nostalgia was significantly correlated with the self-continuity subconstruct of life meaningfulness. Contrary to what was hypothesized, however, the low trait nostalgia group reported higher levels of self-continuity. Thus, nostalgia may not be the factor affecting the endorsement of self-continuity as was found in previous nostalgia research within the general population. The present findings suggest that there may be other factors involved in participants' abilities to cope with chronic pain, as well as other factors that influence their self-continuity. For example, individuals with chronic pain may not be using nostalgic reverie to endorse self-continuity but, instead, may be using acceptance and mindfulness, both of which improve self-continuity through embracing the current self by accepting the past and living in the present (R. Harris, 2006). Future research should delve more deeply into self-continuity within the chronic pain population to better understand the mechanisms contributing to self-continuity in this population. This type of research is important, as past research has suggested that chronic pain can be detrimental to self-continuity (Fennell et al., 2019), which is positively associated with psychological wellness (McAdams et al., 2001), the regulation of psychological threat (Landau et al., 2008), and imbuing a sense of MIL. Those with low trait nostalgia reporting significantly higher self-continuity than those with high trait nostalgia suggests that the mechanism in which self-continuity is elicited within the chronic pain population is not necessarily

enhanced through nostalgia. Instead, self-continuity within the chronic pain population could be enhanced through other means, such as acceptance.

The chronic pain population that was sampled in this study has found a sense of self-continuity despite the pain. Past research has shown that nostalgia affects self-continuity through social connectedness (Sedikides et al., 2015). Considering how valuable it is for chronic pain patients to utilize a social support system during treatment (Kindt et al., 2019; Matos et al., 2017), social connection may be strong within the low trait nostalgia group. Further, future research addressing social connection within the chronic pain population is relevant. Resilience within the chronic pain community relies heavily upon pain acceptance, developing a sense of control, engagement in treatment, and establishing social connections (Rolbiecki et al., 2017). Literature on chronic pain has shown that social connection is a major influence on individuals' ability to cope with the pain (McWilliams et al., 2017). Social factors, such as having a solid support system as well as a perception of social inclusion and encouragement, improve an individual's ability to engage in activities despite pain and, in turn, can help the individual cope with pain (Karayannis et al., 2019; McWilliams et al., 2017).

The low trait nostalgia group in this study experienced a higher sense of self-continuity than the high trait nostalgia group; however, the high trait nostalgia group still scored above average in self-continuity. This finding further suggests that there may be other variables affecting self-continuity within this population that were not considered in the present study. Future research would be remiss to not ascertain additional variables that may affect how the chronic pain population imbues self-continuity. In addition, researching the impact of social connection on pain management would provide insight

into how chronic pain patients elicit and utilize social connection to manage their pain.

This research may add insight into the current findings, as it could be that social connection and acceptance are other variables not considered in the present study.

Overall, trait nostalgia was associated with psychological wellness within the present study. The low trait nostalgia group endorsed a higher degree of psychological wellness than the high trait nostalgia group. This goes along with the theory that individuals with chronic pain who either avoid thinking nostalgically or may have learned to not think nostalgically due to experiencing loss appraisals are doing so adaptively. Loss appraisals affect perceptions of MIL (Anand, 2014) and, in turn, MIL has been shown to predict pain patients' psychological functioning (Dezutter et al., 2015). Loss appraisals have also been associated with a high level of passive coping which, in turn, has been linked to lower levels of functioning and higher levels of pain intensity (Ramirez-Maestre et al., 2008). Thus, it makes sense as to why individuals with chronic pain may avoid thinking nostalgically in order to avoid engaging in loss appraising, as doing so can affect their ability to cope with pain and to function in society.

Although there were no specific hypotheses in the present study regarding all the subconstructs of life meaning, analyses were conducted to determine whether there were significant relationships between trait nostalgia and these additional subconstructs. Mattering, how much the individual believes that his or her life matters in the universe, was also found to have a statistically stronger relationship with low trait nostalgia compared to high trait nostalgia. Within the chronic pain population, an individual can often experience loss of his or her sense of self and loss of his or her former self (Anand, 2014). Accompanying that sense of loss, chronic pain patients often lose a sense of

meaning and even a sense that their lives matter. That said, given the findings of the present study, it appears individuals who are less likely to engage in nostalgia thinking experience a greater sense that they are living lives worth living. Individuals with chronic pain may not engage in nostalgic thinking due to nostalgia potentially instigating loss appraisals. Notably, the purpose subscale was not correlated with either high or low trait nostalgia. This finding makes sense when looking at the literature on how chronic pain patients perceive their lives following their pain incidents, due to the changes that occur in their lives. These changes tend to affect their life goals and senses of purpose.

Research has found that individuals who experience significant pain often experience more depressive symptoms and a decreased sense of life purpose (Salt et al., 2017).

Purpose, a goal driven construct, also has been shown to be related to improved physical and mental health and can be related to positive changes in health over time (B. W. Smith & Zatura, 2004). If an individual does not have the ability to engage in his or her valued goals or is not flexible with goals, in this case due to chronic pain, then he or she may experience a decreased sense of purpose (McCracken, 2013). This might explain why the participants who reported having an overall good sense of life meaningfulness, as well as self-continuity and mattering, reported their level of purpose to be lacking: due to the inability to engage in their goals. Nonetheless, this is an interesting finding and warrants further investigation.

Taken together, the findings of the present research have implications for the use of nostalgia within the chronic pain community. Despite previous research indicating that nostalgia is a positive, social emotion and an adaptive coping resource, this does not seem to be true within the chronic pain population. Thus, implementing nostalgia as a coping

tool or utilizing nostalgia as a therapeutic technique should not be the first option within the chronic pain population. Social connection, finding self-continuity and significance in one's life, and learning to avoid engagement in loss appraisals may be strategies that not only provide a sense of MIL within the population, but also buffer against psychological distress within the chronic pain population (Anand, 2014; Hellstrom, 2001; McWilliams et al., 2017; Rolbiecki et al., 2017). Implementing techniques and interventions centered around acceptance and improving social connection appear to be more effective within this population (Carvalho et al., 2018). The low trait nostalgia group, when compared to the high trait nostalgia group, exhibited a higher sense of self-continuity, sense of purpose, and overall life meaning. Heightened perceptions of life meaning are associated with reduction in psychological distress (Greenberg et al., 2008; Routledge & Juhl, 2010). Also, MIL is a protective factor of psychological disorders (Marco et al., 2015) and an increased sense of meaning has mental health benefits (Steger et al., 2006). This potentially explains the current study's finding that the low trait nostalgia group endorsed a higher perception of MIL than the high trait nostalgia group. Specifically, it could be that the low trait nostalgia group is reaping more benefits from MIL than the high trait group, using MIL as a protection against psychological distress. Thus, individuals who use nostalgia to cope may be doing themselves a disservice if they experience chronic pain. Further research into these ideas is necessary to discern the exact impact that nostalgia has on the chronic pain community, but a counterintuitive relationship between nostalgia and life meaningfulness has emerged in the present study.

Limitations

One limitation of the current study is the reliance on self-report data obtained via surveys. Self-report data may fall victim to the social desirability biases. Pain patients often confront a stigma of pain being “all in their heads;” therefore, when approached by a psychology student to participate in a research study related to their pain, they may have felt threatened, which could have compromised participation among individuals who have more ambiguous pain. Further, participants who chose to participate may have been affected by the social desirability bias, by which they may have portrayed themselves more positively as not to appear physically and psychologically weak. Research suggests that the phrasing of pain questions significantly impacts the information given by the patients, especially in older adults (McDonald et al., 2009). For example, closed-ended questions, such as those given to the participants in the current study, have been found to elicit less pain information than open-ended questions (McDonald et al., 2009). This indicates that the close-ended questions, especially the questioning pertaining to pain intensity, may have caused the participants to underreport their current pain levels. Research has also found that patients who are more sensitive to social desirability self-report less psychological distress and pain severity (Deshields et al., 1995). Therefore, the impact of the social desirability bias should be considered in research assessments of patients with chronic pain, as those who have more pronounced social desirability view themselves as more disabled by pain, which may have affected their responding to the psychological distress questions.

Another limitation that may have affected this study is the self-selection bias inherent in research relying on volunteers. Participants who agreed to be in the current

study may be individuals who are coping well with their pain, whereas individuals who declined to participate may not be. In addition, the manner in which the self-report data were obtained, in the doctors' office prior to medical appointments, may have caused some of the participants to have felt rushed by the situation, which may have affected their responding. Ideally, participants would have ample time to complete the survey without outside factors influencing their responding. Practically, this is difficult to implement outside of a controlled setting and much of the research pertaining to trait nostalgia and MIL utilizes self-report data. Although the present study is in accordance with current research methods, outside factors such as worrying about their upcoming appointment, being in current pain, or how well participants are coping with their pain are limitations.

In addition, future research may benefit from adding some type of qualitative approach. A limitation of the present study is that it was purely quantitative and there was no in-depth investigation of present attitudes. The present study was unable to gain conceptualization of patients' perceptions of nostalgia and how they understood it, which could be gleaned through qualitative means. This was a limitation of the current study as evidenced by participants often needing further instruction regarding the nostalgia scale, asking clarifying questions pertaining to the definition of nostalgia, and asking for examples. Therefore, exploring qualitative responses of attitudes toward nostalgic thinking in addition to eliciting specific examples from participants may mitigate some limitations of the present study.

Another potential limitation of the study includes the size of the groups. The group sizes in the current study were not equal in number, with the low trait nostalgia

group being considerably smaller than the high trait nostalgia group. Despite the groups being similar along demographic variables, the vast difference in the size of the nostalgia groups is a limitation. An additional limitation is that the participants were recruited from one location, a pain management practice in New Jersey. The sample of the current study is a very limited portion of the overall chronic pain population, which compromises generalizability.

Future Directions

Future research focusing on life meaningfulness, self-continuity, psychological wellness, and nostalgia within the chronic pain population is warranted. It could prove useful to not only replicate what was found in this study, but also to elaborate on the present results. The lack of generalizability of the present study means that replication in more settings is pertinent for identifying whether these results are representative of the chronic pain community as a whole, rather than the sample recruited. Research focusing particularly on the coping aspects of nostalgia would also be beneficial, as the interplay between nostalgia, continuity, self-esteem, and psychological wellness have not been looked at extensively within this population, though it was touched on in the present study. Interestingly, given the present study finding that the low trait nostalgia group experienced more life meaningfulness than the high trait nostalgia group, future research would also benefit from using a larger number of participants recruited from various locations in order to support these findings.

Research examining the quality of nostalgic thinking and comparing these thoughts with loss appraisals within the chronic pain community is warranted. It may be that individuals who experience more life meaningfulness avoid nostalgic thinking in

order to prevent thinking about their pasts in ways that cause them to focus on currently unattainable past abilities and activities, which has been shown to decrease feelings of life meaning (McCracken, 2013). This type of future research may aid in explaining the findings that the low trait nostalgia group experienced more life meaningfulness, self-continuity, and psychological wellness than the high trait nostalgia group.

Furthermore, future research on understanding the relationship between trait nostalgia and self-continuity is warranted. Past research on nostalgia suggests that nostalgia influences continuity through means of social connection, though in the present study it was found that the low trait nostalgia group experienced a strong sense of self-continuity despite being in the low nostalgia group. Therefore, future research exploring how nostalgia and self-continuity are related within various populations is not only important to understanding how nostalgia works, but will also be useful in understanding which populations benefit from this aspect of nostalgia, as it is evident that not all do. In addition to this, research that goes further than simply determining whether there are differences found between low and high trait nostalgia will prove useful when considering utilization of nostalgia as a resource and therapeutic tool. Specifically, it would be valuable to not only assess for nostalgia proneness but to also manipulate nostalgic feelings within participants. Trait nostalgia showed a significant relationship with self-continuity; therefore, understanding how the chronic pain population employs nostalgia can be essential in taking steps toward the implementation of nostalgia as a coping tool, as well as toward the determination of when it may not be appropriate to use. Also, future research into how nostalgia affects each of the subconstructs of meaning individually is warranted. This is the first study of its kind delving into the differentiation

of subconstructs of MIL as they relate to trait nostalgia. Thus, future research is necessary to truly understand how nostalgia affects the three subconstructs of MIL, not only within the chronic pain population but also the general population. Additionally, future research involving a larger, more varied population will allow for more generalizable results. This will also allow for groups to be more equal in size, potentially uncovering more salient information about the relationship between high and low trait nostalgia, life meaningfulness, and psychological wellness.

In addition, and aside from future research within the chronic pain population, future research on nostalgia and how it interplays with reminiscence therapy, which is a popular nonpharmacological approach to treating older individuals (Coleman, 2005), is warranted. The present study included participants with an average age of 57 years, with the oldest participant aged 85. In reminiscence therapy, elderly individuals' (typically aged 65 and over) attention, concentration, and memory are stimulated by therapeutic techniques that generally involve recalling, processing, and interpreting information from their pasts. Typically, reminiscence therapy uses memory triggers such as old items, music, and photos to trigger memories (Manav & Simsek, 2019). Much like nostalgia, cognitive/integrative reminiscence therapy has shown to improve life meaningfulness as well as quality of life and significantly lessen clinical depression (Watt & Cappeliez, 2000). Further research into nostalgia as it relates to reminiscence therapy would assist in the understanding of how reminiscence therapy helps older individuals. It would also be interesting for future research to utilize general population groups as well as chronic pain population groups to continue to investigate how nostalgia as a tool and reminiscence therapy may impact both populations. In addition, this type of research would also allow

for furthered understanding of how and when to integrate nostalgia as a tool in therapy, as research on nostalgia's psychological benefits is lacking in clinical samples.

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